

**DO ORAL PROBLEMS IMPACT THE QUALITY OF LIFE OF HOSPITAL TECHNICIANS AND NURSES?**

**¿LOS PROBLEMAS BUCALES IMPACTAN EN LA CALIDAD DE VIDA DE LOS TÉCNICOS Y ENFERMEROS HOSPITALARIOS?**

**OS PROBLEMAS BUAIS IMPACTAM NA QUALIDADE DE VIDA DE TÉCNICOS E ENFERMEIROS HOSPITALARES?**

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**ABSTRACT**

**Introduction:** Oral problems can affect individuals' lives in social, physical, and emotional aspects, negatively impacting their quality of life. **Objective:** To evaluate the impact of oral health issues on the quality of life of nursing technicians and hospital nurses and possible associations with sociodemographic variables and stress levels. **Methods:** The sample consisted of 111 nursing professionals from a university hospital in Espírito Santo, Brazil. Sociodemographic forms and the Oral Health Impact Profile and Bianchi Stress Scale questionnaires were administered. Fisher's Exact Test, Odds Ratio, and Mantel-Haenszel tests were used for statistical analysis. **Results:** Quality of life was impacted by oral health problems in 57 (51.4%) individuals. The highest perception of impact was found in individuals over 50 years old, single, widowed, and divorced, with up to 12 years of education and up to 5 minimum wages. The dimensions with the greatest impact were physical pain and psychological discomfort. Nursing technicians showed a greater impact on quality of life compared to nurses. A significant relationship was found between oral health impact and the stress variable, where individuals with medium/high levels of stress had a 1.618 times greater chance of impact on quality of life. **Conclusion:** Oral health conditions influenced the quality of life of these professionals, and higher levels of stress contribute to a higher frequency of impact.

**Keywords:** Quality of Life; Oral Health; Nursing Team; Occupational Health.

**RESUMO**

**Introdução:** Os problemas bucais podem afetar a vida dos indivíduos nos âmbitos social, físico e emocional, impactando negativamente na qualidade de vida. **Objetivo:** avaliar o impacto de problemas bucais na qualidade de vida de técnicos de enfermagem e enfermeiros hospitalares e possível associação com variáveis sociodemográficas e níveis de estresse. **Métodos:** A amostra foi composta por 111 profissionais de enfermagem de um hospital universitário do Espírito Santo, Brasil. Foram aplicados o formulário sociodemográfico e os questionários Oral Health ImpactProfile e Escala Bianchi de Stress. Para análise estatística foram utilizados os testes Exato de Fisher, Odds-ratio e Mantel-Haenszel. **Resultados:** A qualidade de vida foi impactada pelos problemas de saúde bucal em 57 (51,4%) indivíduos. A maior percepção de impacto foi encontrada em indivíduos acima de 50 anos, solteiros, viúvos e divorciados, com até 12 anos de estudo e até 5 salários-mínimos. As dimensões de maior impacto foram a dor física e o desconforto psicológico. Técnicos de enfermagem apresentaram maior impacto na qualidade de vida quando comparado com os enfermeiros. Foi encontrada relação significativa do impacto de saúde bucal com a variável estresse, no qual os indivíduos com médio/alto nível de estresse apresentaram uma chance 1,618 vezes maior de impacto na qualidade de vida. **Conclusão:** As condições de saúde bucal influenciaram na qualidade de vida desses profissionais e maiores níveis de estresse colaboraram para maior frequência de impacto.

**Palavras-chave:** Qualidade de Vida; Saúde Bucal; Saúde do Trabalhador; Equipe de Enfermagem.

**RESUMEN**

**Introducción:** Los problemas bucales pueden afectar la vida de los individuos en los ámbitos social, físico y emocional, impactando negativamente en la calidad de vida. **Objetivo:** Evaluar el impacto de los problemas bucales en la calidad de vida de los técnicos en enfermería y enfermeros hospitalarios y la posible asociación con variables sociodemográficas y niveles de estrés. **Métodos:** La muestra estuvo compuesta por 111 profesionales de enfermería de un hospital universitario en el Espíritu Santo, Brasil. Se aplicaron el formulario sociodemográfico y los cuestionarios Oral Health Impact Profile y Escala Bianchi de Estrés. Para el análisis estadístico se utilizaron las pruebas Exacta de Fisher, Odds-ratio y Mantel-Haenszel. **Resultados:** La calidad de vida fue impactada por los problemas de salud bucal en 57 (51,4%) individuos. La mayor percepción de impacto se encontró en individuos mayores de 50 años, solteros, viudos y divorciados, con hasta 12 años de estudios y hasta 5 salarios mínimos. Las dimensiones de mayor impacto fueron el dolor físico y el malestar psicológico. Los técnicos en enfermería presentaron un mayor impacto en la calidad de vida en comparación con los enfermeros. Se encontró una relación significativa entre el impacto de la salud bucal y la variable estrés, en la cual los individuos con nivel de estrés medio/alto presentaron una probabilidad 1,618 veces mayor de impacto en la calidad de vida. **Conclusión:** Las condiciones de salud bucal influyeron en la calidad de vida de estos profesionales y los mayores niveles de estrés colaboran para una mayor frecuencia de impacto.

**Palabras clave:** Calidad de Vida; Salud Bucal; Salud del Trabajador; Equipo de Enfermería.



## INTRODUCTION

Oral health goes far beyond function; it also encompasses aesthetic and psycho-emotional components<sup>1</sup>. Oral health problems have deeper roots in social, cultural, political, and economic issues. Oral condition affects various aspects of an individual's life, such as social relationships, diet, daily activities, and quality of life<sup>2</sup>. Quality of life, which involves physical, mental, psychological, and emotional dimensions, is usually assessed using the Oral Health Impact Profile (OHIP-14)<sup>3,4</sup>.

There is a growing concern in research to assess the impact of oral dysfunctions on people's quality of life and to relate them to functional limitations as well as emotional and social well-being<sup>5</sup>. Assessing people's perception of their oral health, which cannot be captured via clinical methods, is extremely important to analyze potential difficulties, considering that a clinical method would not be able to do so<sup>4,6</sup>.

Quality of life has a direct impact on the quality of work and inter-professional relations, affecting professional motivation, satisfaction, and productivity<sup>5</sup>. Studies on the subject have allowed the development of actions and practices aimed at benefiting workers, increasing their well-being and the quality of the services provided<sup>7</sup>. Mouth disorders can cause emotional disturbances and compromise workers' efficiency in their daily activities. In addition, emotional disorders, such as stress, can negatively affect oral health, also compromising efficiency<sup>2</sup>.

A high level of work-related stress results in a decreased quality of life, leading to demotivation, irritation, impatience, depression, and dissatisfaction in personal life. Such negative effects change the way individuals interact in different aspects of their lives, because work plays a decisive role in health and quality of life<sup>7,8</sup>.

Nursing professionals often face occupational stress due to the challenging and demanding nature of their jobs<sup>9</sup>. Both nurses and nursing technicians are subject to high levels of stress, which has become more evident since the onset of the COVID-19 pandemic. In addition, high workloads and demanding physical and emotional tasks contribute to a poorer quality of life and to an increased in sick leave, absenteeism, lower productivity, impatience, and interpersonal difficulties<sup>7,10</sup>.

The assessment of oral health-related quality of life in hospital nurses is crucial in the context of occupational health, especially in the aftermath of the COVID-19 pandemic. Nurses play a fundamental role in health care, but their oral health is often neglected despite its importance<sup>11</sup>. This study aimed to assess the impact of oral problems on quality of life and its association with sociodemographic variables and stress levels among hospital nursing staff.

## METHODS

### Ethical considerations

This study was approved by the Research Ethics Committee under opinion No. 4.768.935.



All participants signed an informed consent form.

### Study design

This analytical cross-sectional epidemiological study was conducted at the Cassiano Antônio de Moraes University Hospital (HUCAM) in southeastern Brazil.

### Population

The sample population was selected from 565 nursing technicians and nurses at HUCAM. A total of 106 participants were required, based on the following parameters: 30% prevalence of oral problems, a significance level ( $\alpha$ ) of 0.05, and a test power of 80%, which resulted in a sample size of 106 participants. The sample size was calculated using the statistical analysis software G\*Power (version 3.1.9.2).

Randomization was performed using a random number table. If no one could be found or if the selected professional refused to take part after two attempts, the substitution criterion was a new draw. After the draw, the workers were approached at their workplaces. Workers were included if they were actively practicing their profession. Workers who could not be located, refused to take part in the study, or were on leave during the data collection period were excluded. In total, 111 professionals (64 technicians and 47 nurses) participated in this study.

### Data collection

Data collection involved the administration of questionnaires validated by a team of researchers. The participants were

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approached in the workplace, where they were given instructions on how to complete the questionnaires, ensuring that they understood each question. A sociodemographic questionnaire and two validated self-administered questionnaires were used, namely, the Oral Health Impact Profile (OHIP-14) and the Bianchi Stress Scale.

The OHIP-14 is a tool for assessing oral health, related quality of life. It consists of 14 questions that address different aspects of the impact of oral problems, covering domains such as pain, discomfort, functional limitations, self-awareness, and psychosocial impact. A five-point Likert-type frequency scale was used to score the OHIP answers, and the results were evaluated dichotomously. The options "always" and "sometimes" were considered as acknowledging impact, whereas the options "seldom," "rarely," and "never" were considered as denying impact.

The Bianchi Stress Scale, formulated and validated in Brazil in 2009, consists of 51 items. It was used to assess the stress levels of hospital nursing professionals during the performance of their tasks, and the results were used to determine the most stressful domain and activities<sup>11</sup>.

### Variables

The independent variables were as follows: sociodemographic characteristics (sex, age group, marital status, years of schooling, profession, salary income, and time since



graduation) and stress levels (low, medium, and high).

The dependent variable was the OHIP-14 score, comprising the following seven dimensions: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap.

### Data analysis

A descriptive analysis of the data was performed using frequency tables with numbers and percentages for each item in the survey instrument. The relationship between sociodemographic variables, stress, and the impact of oral problems on quality of life was analyzed using Fisher's exact test. The odds ratio (OR) was calculated to examine the strength of the association between event and exposure. The Mantel-Haenszel test was used to determine the association between the combined OHIP-14 dimensions (total score) and the independent variables, with the magnitude of the effect calculated using the combined OR. The alpha level of significance was 5% in all analyses. The IBM Statistical Package for the Social Sciences, version 20.0, was used for statistical analysis of the data.

## RESULTS

The data showed that the majority of respondents were female (89.2%), aged 44–50 years (28.8%), married (64%), had >12 years of schooling (71.2%), were nursing technicians (57.7%), had a monthly family income of ≤5

minimum wages (60.3%), and had graduated ≥16 years earlier (46.9%).

The prevalence of the impact of oral problems on quality of life was 51.4%, expressed by 57 participants in the sample, as shown in Table 1. The dimensions with the greatest impact were physical pain (37.8%) and psychological discomfort (35.1%), followed by physical disability (27.9%), psychological disability (26.1%), disability (18.9%), functional limitation (15.3%), and social disability (11.7%).

When the age group variable was analyzed, statistical significance was observed in the dimensions of disability (OR = 7.900, 95% confidence interval [CI] = 1.410–10.198), psychological discomfort (OR = 4.480, 95% CI = 1.675–11.985), physical pain (OR = 3.813, 95% CI = 1.435–10.129), social disability (OR = 4.393, 95% CI = 1.304–14.804), psychological disability (OR = 3.070, 95% CI = 1.152–8.184), and physical disability (OR = 2.698, 95% CI = 1.021–7.128). In the combined Mantel-Haenszel test, participants aged >50 years reported a higher frequency of impact. The OR showed that these individuals had a 5.769 times greater chance of being affected (95% CI = 1.806–18.431) than those aged <50 years.

In terms of marital status, statistical significance was observed in the psychological disability (OR = 5.519, 95% CI = 2.217–13.742) and handicap (OR = 3.792, 95% CI = 1.410–10.198) dimensions. In the combined Mantel-Haenszel test, single, widowed, or divorced participants reported a higher frequency of impact. The OR showed that these individuals

had a 2.396 times greater chance of being affected (95% CI = 1.075–5.340) than those who were married or living with a partner.

Regarding “years of schooling,” statistical significance was observed in the dimensions of physical disability (OR = 4.267, 95% CI = 1.748–10.414), psychological disability (OR = 4.097, 95% CI = 1.660–10.107), functional limitation (OR = 4.675, 95% CI = 1.592–13.732), social disability (OR = 4.933, 95% CI = 1.473–16.519), physical pain (OR =

2.946, 95% CI = 1.263–6.874), disability (OR = 3.614, 95% CI = 1.349–16.519), and psychological discomfort (OR = 2.936, 95% CI = 1.254–6.876). In the combined Mantel-Haenszel test, individuals with up to 12 years of schooling reported a higher frequency of impact. The OR showed that these individuals had a 2.766 times greater chance of being affected (95% CI = 1.159–6.597) than those with >12 years of schooling.

**Table 1** – Sociodemographic characteristics of the nursing team at the Cassiano Antônio de Moraes University Hospital, Vitória-ES, Brazil.

Characteristics	Number	Percentage (%)
Sex		
Female	99	89.2
Male	12	10.8
Age group (years)		
≤43	57	51.4
44–50	32	28.8
≥51	22	19.8
Marital status		
Single, divorced, or widowed	40	36.0
Married/living with partner	71	64.0
Years of schooling		
≤12	32	28.8
>12	79	71.2
Profession		
Nursing technician	64	57.7
Nurse	47	42.3
Income		
≤5 minimum wages	67	60.3
>5 minimum wages	44	39.6
Time since graduation (years)		
≤5	7	6.3
6–10	23	20.7
11–15	29	26.1
≥16	52	46.9
Total	111	100.0

When analyzing the variable “profession” and its relationship with the impact of oral problems, statistical significance was observed in all dimensions, as shown in Table 2. The dimensions were physical pain (OR = 4.495,

95% CI = 1.817–10.798), psychological discomfort (OR = 4.580, 95% CI = 1.853–11.320), disability (OR = 9.500, 95% CI = 2.089–43.197), physical disability (OR = 4.380, 95% CI = 1.623–11.824), functional limitation



(OR = 6.888, 95% CI = 1.492–31.806), psychological disability (OR = 3.833, 95% CI = 1.414–10.392), and social disability (OR = 4.670, 95% CI = 0.983–22.181). In the combined Mantel–Haenszel test, nursing technicians

reported a higher frequency of impact. The OR showed that these individuals had a 4.073 times greater chance of being affected (95% CI = 1.827–9.077) than nurses.

**Table 2** – Distribution of the nursing team of the Cassiano Antônio de Moraes University Hospital, Vitória-ES, Brazil, based on the frequency of the impact of oral problems by dimensions (n = 111)

OHIP dimension	With impact		Without impact	
	No.	(%)	No.	(%)
Functional limitation	17	(15.3)	94	(84.7)
Physical pain	42	(37.8)	69	(62.2)
Psychological discomfort	39	(35.1)	72	(64.9)
Physical disability	31	(27.9)	80	(72.1)
Psychological disability	29	(26.1)	82	(73.9)
Social disability	13	(11.7)	98	(88.3)
Disability	21	(18.9)	90	(81.1)
Overall	57	(51.4)	54	(48.6)

The analysis of the variable “salary income” also showed statistical significance, as shown in Table 3. The dimensions were psychological discomfort (OR = 3.875, 95% CI = 1.569–9.571), physical disability (OR = 3.770, 95% CI = 1.396–10.178), disability (OR = 5.020, 95% CI = 1.381–18.251), functional limitation (OR = 6.058, 95% CI = 1.311–27.987), psychological disability (OR = 2.584, 95% CI = 0.994–6.717), physical pain (OR = 2.162, 95%

CI = 0.952–27.987), and social disability (OR = 4.125, 95% CI = 0.868–19.608). In the combined Mantel–Haenszel test, individuals with an income of ≤5 minimum wages reported a higher frequency of impact. The OR showed that these individuals had a 2.353 times greater chance of being affected (95% CI = 1.080–5.127) than those with an income of more than 5,755.00 reais.

**Table 3** - Relationship between the impact of oral problems and professionals at the Cassiano Antônio de Moraes University Hospital, Vitória-ES, Brazil.

Dimension - OHIP	Nursing technician		Nurse		p value	OR
	Nº	%	Nº	%		
Functional limitation						
With impact	15	23,4	2	4,3	0,004	6,888
Without impact	49	76,6	45	95,7		1,492 – 31,806
Physical pain						
With impact	33	51,6	9	19,1	0,000	4,495
Without impact	31	48,4	38	80,9		1,871 – 10,798
Psychological discomfort						
With impact	31	48,4	8	17,0	0,000	4,580
Without impact	33	51,6	39	83,0		1,853 – 11,320



<b>Physical disability</b>						
With impact	25	39,1	6	12,8	0,002	4,380
Without impact	39	60,9	41	87,2		1,623 – 11,824
<b>Psychological disability</b>						
With impact	23	35,9	6	12,8	0,005	3,833
Without impact	41	64,1	41	87,2		1,414 – 10,392
<b>Social disability</b>						
With impact	11	17,2	2	4,3	0,032	4,670
Without impact	53	82,8	45	95,7		0,983 – 22,181
<b>Disability</b>						
With impact	19	29,7	2	4,3	0,000	9,500
Without impact	45	70,3	45	95,7		2,089 – 43,197
<b>Mantel-Haenszel</b>					<b>0,000</b>	<b>4,073</b>
						<b>1,827 – 9,077</b>

When the impact of oral health was analyzed relative to the variable “stress,” a statistically significant relationship was observed (as shown in Table 4) in the dimensions of disability (OR = 4.000, 95% CI = 1.098–14.574), social disability (OR = 7.600, 95% CI = 0.949–60.838), and psychological disability (OR = 2.582, 95% CI = 0.949–7.025). In the combined Mantel–Haenszel test, individuals with a medium/high level of stress reported a higher

frequency of impact. The OR showed that these individuals had a 1.618 times greater chance of being affected (95% CI = 0.738–3.548) than those with low levels of stress.

With regard to the variables “sex” and “time since graduation,” no statistical significance was found in any of the OHIP-14 dimensions or in the combined dimensions using the Mantel–Haenszel test.

**Table 4** - Relationship between the impact of oral health and the income of nursing team professionals at the Cassiano Antônio de Moraes University Hospital, Vitória-ES, Brazil.

Dimension - OHIP	$\leq 5$ minimum wages		$> 5$ minimum wages		p value	OR
	Nº	%	Nº	%		
<b>Functional limitation</b>						
With impact	15	22,4	2	4,5	0,008	6,058
Without impact	52	77,6	42	95,5		1,311 – 27,987
<b>Physical pain</b>						
With impact	30	44,8	12	27,3	0,048	2,162
Without impact	37	55,2	32	72,7		0,952 – 4,908
<b>Psychological discomfort</b>						
With impact	31	46,3	8	18,2	0,002	3,875
Without impact	36	53,7	36	81,8		1,569 – 9,571
<b>Physical disability</b>						
With impact	25	37,3	6	13,6	0,005	3,770
Without impact	42	62,7	38	86,4		1,396 – 10,178
<b>Psychological disability</b>						
With impact	22	32,8	7	15,9	0,037	2,584
Without impact	45	67,2	37	84,1		0,994 – 6,717
<b>Social disability</b>						
With impact	11	16,4	2	4,5	0,050	4,125
Without impact	56	83,6	42	95,5		0,868 – 19,608
<b>Disability</b>						
With impact	18	26,9	3	6,8	0,006	5,020
Without impact	49	73,1	41	93,2		1,381 – 18,251
<b>Mantel-Haenszel</b>					<b>0,024</b>	<b>2,353</b>
						<b>1,080 – 5,127</b>



## DISCUSSION

OHIP-14, a widely used research instrument to subjectively assess the impact of oral health on quality of life, includes self-perception indicators to allow a better understanding of the needs of the population under study<sup>12,13,14</sup>.

Approximately half of the participants in this study experienced an impact of oral problems on their quality of life in one or more dimensions of the OHIP-14. In this study, the prevalence of this impact was higher than that reported in studies conducted in the state of Espírito Santo, which was approximately 30%<sup>5,15,16</sup>.

This difference is likely due to the COVID-19 pandemic, caused by the severe acute respiratory syndrome coronavirus (SARS-CoV-2), which led to behavioral changes across workplaces<sup>12</sup>. Elective procedures for basic oral health care may not have been prioritized or performed routinely due to the risk of droplet contamination with SARS-CoV-2.

The high impact of oral problems on quality of life observed in our study coincided with the suspension of free dental care provided on campus and at other locations<sup>17</sup>, when services were restricted, resulting in a significant increase in oral problems. A recent study reported an increase in mouth infections from 51% to 71.9% during this period<sup>18</sup>.

Consistent with other studies, this study revealed that physical pain and psychological discomfort in the oral region affected oral health

in more than one-third of the professionals assessed<sup>2,19</sup>.

Some people prioritize oral aesthetic concerns over chewing function<sup>20</sup>, which also applies to the nursing team, as it is involved in social interaction with the public. Thus, the emphasis on these two dimensions is understandable (physical pain and psychological discomfort). The difficulty in accepting oral problems and the associated embarrassment directly impact quality of life<sup>19,21</sup>.

Regarding the variable “age group,” we found that participants aged >50 years experienced an impact on six of the seven OHIP-14 dimensions: disability, psychological discomfort, physical pain, social disability, psychological disability, and physical disability. Other studies have also demonstrated a greater impact on older individuals<sup>5,22</sup>. In particular, age is associated with poor quality of life in the absence of proper monitoring, preventive measures, and timely interventions.

In addition, married people reported a lower impact of oral problems on their quality of life. Some studies show that people in stable relationships benefit from a support network, which facilitates better care and health promotion<sup>23,24,25</sup>. Conversely, single, widowed, or divorced people, who lack this support network, are more vulnerable and susceptible to the impacts of oral problems<sup>23,24</sup>.

Data on the “years of schooling” variable showed that individuals with up to 12 years of schooling reported a higher frequency of impact than those with >12 years of schooling; similar



results have been obtained by other authors<sup>12,14</sup>. Schooling is a social determinant of health, as a longer period of education and greater knowledge contribute to a better quality of life<sup>2</sup>.

With regard to the “profession” variable, nursing technicians experienced a greater impact of oral problems on quality of life than nurses. This can be explained by the “years of schooling” variable because we determined that it influenced the impact of oral problems. According to a national survey<sup>26</sup>, 80% of Brazilian nurses have a postgraduate degree, whereas 34.3% of nursing assistants and technicians are only graduates.

“Salary income” was another variable with statistical significance, with individuals earning  $\leq 5$  minimum wages reporting a higher frequency of impact. Nursing technicians have lower salaries than nurses, which is another factor that may explain the greater impact experienced by this group. The variables in this study are associated with each other: individuals with fewer years of schooling, nursing technicians in this case, also had lower salaries.

Considering that stress influences the impact of oral problems on quality of life, individuals with medium and high stress levels were more frequently affected. Health professionals in nursing teams seem to be more predisposed to being affected by, and frequently exposed to, stressful situations<sup>5</sup>.

Professional demands, such as long working hours, reorganization of human and material resources, development and implementation of protocols, and emotional

demands, place these professionals under intense pressure to deliver productivity and results. Moreover, the risk of contamination and illness<sup>27</sup> can negatively affect their health<sup>28</sup>.

A limitation of this study is its cross-sectional design, the temporality of which limits the interpretation of the analyses. Another limitation is that the sample comprised individuals who wished to participate in the study, whereas more stressed individuals may have chosen not to complete the questionnaires in their work environment.

To strengthen workers’ empowerment, proposals should be developed that emphasize health education, self-perception, and self-care. In this context, studies that relate the impact of oral health on quality of life to sociodemographic variables and other variables such as stress, as was the case in this study, can provide valuable insights for developing programs and actions aimed at improving the health of this population.

The severity of pandemic-related consequences for oral health remains unclear, reinforcing the need for more studies to clarify the impact of the pandemic on quality of life. This study revealed a correlation between quality of life and oral health, highlighting the need for more qualitative studies to better understand this relationship.

We concluded that oral health impacts the quality of life of hospital nursing staff, with nursing technicians experiencing a greater impact across all dimensions, likely due to factors such as age, marital status, years of



schooling, salary income, and stress. In addition, higher stress levels contribute to more frequent experiences of the effects of oral problems on these professionals' quality of life.

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